Kanagawa Institute of Technology (KAIT)

Junya Ishigami and Associates
2008
Kanagawa, Japan

Structural Engineer - Konishi Structural Engineers
MEP - Environmental Engineering
Thermal - Tomonaga Tokuyama

Elliot Olney
Nicholas Kramer
Junya Ishigami has been known for pushing the boundaries of architecture, specifically structure, since 2004 when he established his own firm Junya and Associates. After graduating from Tokyo National University of Fine Arts and Music in 2000, he went to work for Kazuyo Sejima at SANAA and stayed there for the next 4 years. In 2008, Junya first gained attention by participating in the Venice Architecture Biennale, and completing the Kanagawa Institute of Technology. In 2009 Junya became the youngest recipient of the Architectural Institute of Japan Prize, for KAIT, as well as becoming an associate professor at Tohoku University in Japan. Later in 2010, Junya went on to win the Golden Lion for best project at the Venice Architecture Biennale for his project Architecture as Air. Recently Junya has won competitions for various projects including: an art installation for the Sydney City Center Public Art Plan, a "symbol of peace" for Copenhagen's harbor and a ferry terminal on the Taiwanese island Kinmen. Junya's work has been generally well received by critics, and is currently sitting as the Kenzo Tange Design Critic at the Harvard Graduate School of Design.

The Kanagawa Institute of technology is located in Kanagawa, Japan and was completed in 2004. The building serves as a single story engineering and design studio for students to inhabit whenever they would like. During the design of KAIT, Junya worked very closely with Konishi Structural Engineers, Environmental Engineering for MEP, and Tomonaga Tokuyama for thermal engineering. For KAIT, Junya wanted the building to disappear which into the trees and landscape surrounding the site. Most of Junya's work explores this idea of minimalism in structure and definition of space. With KAIT, Junya wanted to continue to pursue these ideas as well as to reflect the site and create a building of the landscape. To realize this idea for KAIT, Junya designed a system of 42 compressive columns and 263 post tensioned columns to resist lateral loads, and removed all earthquake-resisting walls or braces. According to Junya this process took over a thousand digital and physical models and required him to work very closely with his structural engineer. The compressive columns hold a regular size of 2" by 3" while the post tensioned shear columns vary in size and orientation throughout the building to help it feel more like a forest of trees. As well as support the building the columns are clustered in masses which move through the structure and define spaces within their path.

To further the illusion of a building that disappears into the landscape, the steel structure was painted white and the structural glass curtain wall was set one foot away from the roof structure and wrapped with a 1 foot wide piece of trim, to help hide the mass of the roof behind. Below the roof, the glass seems to flow to the ground, where it actually meets and rests on a thin steel pad on top of the concrete slab. The structural glass system is as elegant and minimal as the rest of the building. The structural glass curtain wall consist of the exterior facing sheet and a double thick perpendicular brace every 1.5 meters at the joints of the exterior face. On top the brace is held in between a structural frame to keep it from moving laterally, and attached to the exterior sheets with a silicon sealant. The concrete slab, which the building sits on, is also concealing the electrical and plumbing for the building, helping further Junya's concept. As well as through the slab, the electrical and lighting is tucked and concealed in the corrugated roof, which is also housing long stretches of skylights that flood the space with light throughout the day. To avoid the need for walls and privacy, there is no bathroom in KAIT, so the occupants must use the facilities next door, however there is minimal plumbing to provide a sink within the space. The HVAC system has also been removed from the building, and is instead conditioned by a number of free standing heaters and air conditioners around the space, and vented through three simple openings in the top of the structure. Overall Junya and the Kanagawa Institute of technology goes great lengths to integrate the few systems it does have.
Structural Columns
Post-Tensioned Shear Columns
Two Way Beam Roof Structure
Structural Glass Curtain Wall
Heating / Cooling
Fire Extinguishers


Sources